

Express Mail Label No. EV 368074781 US
Application No. 10/005,797
Attorney Docket No. 3957-8-DIV

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. Please add new claim 50-56 and amend the claims as follows:

Listing of Claims:

1. (Currently Amended) A system for launching a projectile to remove a body of rock in an excavation, comprising:

a projectile that includes:

a body containing an explosive charge;

a nose, ~~the nose~~ having a central portion in fixed relation to said body and extending across a substantial portion of a front face of the nose, said central portion being one of substantially flat and concave to inhibit deflection of the projectile from a face of the rock;

~~a body containing an explosive charge;~~ and

a tail having a plurality of fins to control the trajectory of the projectile, wherein the fins have a length and the length is at least about 60% of the total length of the projectile; and

a tube for launching the projectile, wherein the nose is the one of substantially flat and concave after launch from the tube and a center of gravity of the projectile is located in the body and a center of pressure of the projectile is located in the tail.

2. (Previously Presented) The system of Claim 1, wherein the body contains a detonating device, the detonating device having a primer in a proximal end and a striker in a distal end, the

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striker and primer being separated from one another by a spring member which forces the striker away from the primer and a safety pin which restricts the motion of the striker towards the primer and the detonating device is located in a pocket in the projectile, the pocket having at least one of a length and width that exceeds a corresponding one of a length and width of the detonating device, thereby permitting at least one of longitudinal and latitudinal motion of the detonating device in the pocket in response to movement of the projectile.

3. (Previously Presented) The system of Claim 1, wherein the outer diameter of the body is no less than about 25% and no more than about 100% of the outer diameter of the tail.

4. (Canceled).

5. (Previously Presented) The system of Claim 2, wherein a gap between a sidewall of the detonating device and a sidewall of the pocket ranges from about 0.5 to about 4.0 mm.

6. (Previously Presented) The system of Claim 2, wherein a gap exists between an inner wall of the pocket and an outer wall of the detonating device and the gap ranges from about 0.5 to about 4.0 mm.

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7. (Previously Presented) The system of Claim 2, wherein a distal end of the detonating device has a larger outer diameter than a proximal end of the detonating device such that the proximal end of the detonating device can be received along substantially the entire length of the pocket and the distal end of the detonating device cannot be received along substantially the entire length of the pocket.

8-36. (Canceled)

37. (Previously Presented) The system of Claim 1, wherein said nose is concave.

38. (Previously Presented) The system of Claim 1, wherein said nose is substantially flat.

39. (Previously Presented) The system of Claim 1, wherein said nose has a diameter that is about equal to a maximum diameter of said projectile.

40. (Currently Amended) A system for launching a projectile to remove a body of rock in an excavation, comprising:

projectile means for removing the body of rock that includes:

body means for containing an explosive charge;

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nose means for contacting the body of rock, the nose means having a central portion in fixed relation to said body means and extending across a substantial portion of a front face of the nose, said central portion being one of substantially flat and concave to inhibit deflection of the projectile means from a face of the rock;

~~body means for containing an explosive charge;~~ and

tail means having a plurality of fins for controlling the trajectory of the projectile means, wherein the fins have a length and the length is at least about 60% of the total length of the projectile; and

tube means for launching the projectile, wherein the nose means is the one of substantially flat and concave after launch from the tube means.

41. (Previously Presented) The system of Claim 40, wherein a center of gravity of the projectile means is located in the body means and a center of pressure of the projectile means is located in the tail means.

42. (Previously Presented) The system of Claim 40, wherein the body means contains a detonating device, the detonating device having a primer in a proximal end and a striker in a distal end, the striker and primer being separated from one another by a spring member which forces the striker away from the primer and a safety pin which restricts the motion of the striker towards the primer and the detonating device is located in a pocket in the projectile means, the

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pocket having at least one of a length and width that exceeds a corresponding one of a length and width of the detonating device, thereby permitting at least one of longitudinal and latitudinal motion of the detonating device in the pocket in response to movement of the projectile means.

43. (Previously Presented) The system of Claim 40, wherein the outer diameter of the body means is no less than about 25% and no more than about 100% of the outer diameter of the tail means.

44. (Canceled).

45. (Previously Presented) The system of Claim 41, wherein a gap between a sidewall of the detonating device and a sidewall of the pocket ranges from about 0.5 to about 4.0 mm.

46. (Previously Presented) The system of Claim 41, wherein a gap exists between an inner wall of the pocket and an outer wall of the detonating device and the gap ranges from about 0.5 to about 4.0 mm.

47. (Previously Presented) The system of Claim 41, wherein a distal end of the detonating device has a larger outer diameter than a proximal end of the detonating device such that the proximal end of the detonating device can be received along substantially the entire

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length of the pocket and the distal end of the detonating device cannot be received along substantially the entire length of the pocket.

48. (Previously Presented) The system of Claim 41, wherein the nose means is substantially flat.

49. (Previously Presented) The system of Claim 41, wherein the nose means is concave.

50. (New) A method of launching a projectile to remove a body of rock in an excavation, comprising:

launching a projectile from a tube, wherein the projectile includes:

a body containing an explosive charge;

a nose being one of substantially flat and concave to inhibit deflection of the projectile from a face of the rock; and

a tail having a plurality of fins to control the trajectory of the projectile, wherein the fins have a length and the length is at least about 60% of the total length of the projectile;

while in flight, maintaining the nose with an effective air resistance profile that is the one of substantially flat and concave for a duration of the flight of the projectile.

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51. (New) The method of Claim 50, further comprising providing the body with a detonating device, the detonating device having a primer in a proximal end and a striker in a distal end, the striker and primer being separated from one another by a spring member which forces the striker away from the primer and a safety pin which restricts the motion of the striker towards the primer and the detonating device is located in a pocket in the projectile, the pocket having at least one of a length and width that exceeds a corresponding one of a length and width of the detonating device, thereby permitting at least one of longitudinal and latitudinal motion of the detonating device in the pocket in response to movement of the projectile.

52. (New) The method of Claim 50, further comprising providing an outer diameter of the body of no less than about 25% and no more than about 100% of an outer diameter of the tail.

53. (New) The method of Claim 51, further providing a gap between a sidewall of the detonating device and a sidewall of the pocket in the range of from about 0.5 to about 4.0 mm.

54. (New) The method of Claim 50, further comprising providing a gap between an inner wall of the pocket and an outer wall of the detonating device and the gap is in the range of from about 0.5 to about 4.0 mm.

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55. (New) The method of Claim 51, further providing a distal end of the detonating device with a larger outer diameter than a proximal end of the detonating device such that the proximal end of the detonating device can be received along substantially the entire length of the pocket and the distal end of the detonating device cannot be received along substantially the entire length of the pocket.